

### **REMARKS**

The Office Action dated June 8, 2006, has been received and carefully noted. The above amendments to the specification and claims, as well as the following remarks, are submitted as a full and complete response thereto.

Claims 1-25 are currently pending, of which claims 1, 7, 13, and 16 are independent claims. Claims 13 and 16 have been amended and claims 22-25 have been added to more particularly point out and distinctly claim the invention. No new matter has been added. Claims 1-25 are respectfully submitted for consideration.

#### **Specification Objection**

The specification was objected to because paragraph 0002 did not indicate the status of the applications listed therein. The specification has been amended to include the status of each of the patents listed on page 1 at paragraph 0002. Accordingly, it is respectfully requested that this rejection be withdrawn.

#### **Claim Objections**

The Office Action suggested that “configured to search” be amended to “searching.” Applicants respectfully submit that “configured to” is standard claim drafting terminology, and respectfully decline to insert a method limitation into an apparatus claim. Applicants also respectfully submit that “configured to” is not optional

language, and there is no legal basis for concluding that it is optional. Accordingly, it is respectfully requested that this objection be withdrawn.

### **Rejections under 35 U.S.C. 102(e)**

Claims 1-2, 4, 6-8, 10, 12-13, 15-17, 19, and 21 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,453,358 of Michels et al. ("Michels"). Applicants respectfully submit that the claims recite subject matter that is neither disclosed nor suggested in the cited art.

Claim 1, upon which claims 2-6 depend, is directed to a table search device. The device includes a table having a plurality of entries. The device also includes a cache having a subset of entries of the plurality of entries of the table. The device further includes a search engine configured to first search the cache in a first number of search cycles and then search the table in a second number of search cycles based on search results of the cache. The search engine is connected to the table and the cache.

Claim 7, upon which claims 8-12 depend, is directed to a table search system. The table search system includes a table means for storing a plurality of entries. The table search system also includes a cache for storing a subset of entries of the plurality of entries of the table means. The table search system further includes a search engine means for initially search the cache means in a first number of search cycles and then searching the table means in a second number of search cycles based on search results of the cache means.

Claim 13, upon which claims 14-15 depend, is directed to method for performing a table lookup. The method includes creating a table having a plurality of entries in a search device. The method also includes creating a cache, in the search device, having a subset of entries of said plurality of entries of said table. The method additionally includes searching, by a search engine in the search device, said cache in a first number of search cycles. The method further includes searching, by the search engine, said table in a second number of search cycles based on search results of said cache.

Claim 16, upon which claims 17-21 depend, is directed to a network switch. The network switch includes an ARL table having a plurality of entries. The network switch also includes an ARL cache having a subset of entries of the plurality of entries of the ARL table. The network switch further includes a search engine configured to first search the ARL cache in a first number of search cycles and then search the ARL table in a second number of search cycles based on search results of the ARL cache. The search engine is connected to the ARL table and the ARL cache. A search device includes the search engine and the ARL table.

It is respectfully submitted that Michels does not disclose or suggest all of the elements of any of the presently pending claims.

Michels is directed to a network switching device with concurrent key lookups. The switching device includes multiple binary search engines coupled in series including one or more precursor search engines, and a final stage binary search engine.

Michels describes that it uses pipelining, which is defined as connecting search engines in series. Michels asserts that by pipelining search engines, increased throughput can be achieved. Michels posits that it is another aspect of Michels' invention to permit each of the search engines to perform concurrent source and destination searches of the lookup table.

Claim 1 recites, in part, "A table search device comprising: a table having a plurality of entries," claim 7 recites, in part, "A table search system comprising: a table means for storing a plurality of entries" claim 13 recites, in part, "creating a table having a plurality of entries in a search device," and claim 16 recites, in part, "wherein a search device comprises the search engine and the ARL table." Michels does not disclose or suggest at least these features of the present invention.

The Office Action cited Michels Figure 3 as showing these recitations. Michaels, however, clearly shows Primary Memory 58 (which the Office Action identified as corresponding to the claimed table) as separate and outside of search engine 60 (which the Office Action identified as corresponding to the claimed search device). Thus, Michaels does not disclose or suggest "a table search device comprising a table having a plurality of entries" as recited by claim 1, or the features of the other independent claims, which are identified above.

Indeed, Michaels clearly differentiates between its Stage 1 Memory 70 (which the Office Action identified as corresponding to the claimed cache) which is shown and

described as being part of the search engine, and the Primary Memory 58 which is shown and described as separate.

Accordingly, it is respectfully submitted that Michaels does not disclose or suggest all of the elements of any of claims 1, 7, 13, and 16. Claims 2, 4, 6, 8, 10, 12, 15, 17, 19, and 21 depend from claims 1, 7, 13, and 16 respectively, and recite additional limitations. Therefore, it is respectfully submitted that each of claims 2, 4, 6, 8, 10, 12, 15, 17, 19, and 21 recites subject matter that is neither disclosed nor suggested by Michaels. It is therefore respectfully requested that the rejection of claims 1-2, 4, 6-8, 10, 12-13, 15-17, 19, and 21 be withdrawn.

#### **Rejections under 35 U.S.C. 103(a)**

Claims 3, 5, 9, 11, 14, 18, and 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Michels. The Office Action took the position that Michaels does not teach that the first number of search cycles used to search the cache is less than the second number of search cycles used to search the table. The Office Action asserted that it would have been obvious to modify the number of iterations to search a lookup table so that it will take less time for the binary search engine to search a lookup table with 256 entries than searching a lookup table with 64000 entries. Applicants respectfully traverse this rejection.

Applicants respectfully submit that modification of Michels to provide the features discussed above with regard to claims 1, 7, 13, and 16, upon which claims 3, 5, 9, 11, 14, 18, and 20 respectively depend would not have been obvious.

Moreover, with regard to the relative number of search iterations, Michels clearly states that “one aspect of the invention is that the binary search engines divide the binary search of the lookup table by each performing some of the iterations of the overall search. For example, if the lookup table has 64K entries, the binary search engine 66 performs the first eight iterations of the search and binary search engine 68 performs the last eight iterations,” at column 5, line 66 to column 6, line 5. All the other examples in Michels also clearly show the binary search engines sharing equal number of iterations.

As Michels explains at column 5, lines 63-65, although a 64K table may require 16 iterations, a 256 entry table requires 8 iterations to search. Accordingly, one of ordinary skill in the art, following Michels teaching would be motivated to search with two binary search engines, each performing four iterations, if the table had only 256 entries. Accordingly, Applicants respectfully disagree that there is teaching, motivation, or suggestion to modify Michels to provide the claimed invention. It is, therefore, respectfully requested that the rejection of claims 3, 5, 9, 11, 14, 18, and 20 be withdrawn.


## **Conclusion**

For the reasons explained above, it is respectfully submitted that each of claims 1-25 recite subject matter that is neither disclosed nor suggested in the cited art. It is therefore respectfully requested that claims 1-25 be allowed, and that this application be passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

  
Peter Flanagan  
Registration No. 58,178

### **Customer No. 32294**

SQUIRE, SANDERS & DEMPSEY LLP

14<sup>TH</sup> Floor

8000 Towers Crescent Drive

Tysons Corner, Virginia 22182-2700

Telephone: 703-720-7800

Fax: 703-720-7802

PCF:kmp

Enclosures: Additional Claim Fee Transmittal, Check No.14667